

Remarks

Claims 1-15 were originally pending in this application. Applicants have elected to prosecute claims 1-8 and 10/1 - 10/7. Claims 7-9 have been cancelled. Claims 10-15 have been amended to depend from claim 1. Accordingly, claims 1-7 and 10-15 currently remain pending.

Based on the above amendments and the remarks below, Applicants respectfully request reconsideration of the pending claims and passage to issue.

The Examiner rejected claims 1, 2, 5, 6 and 10-15 under 35 U.S.C. § 103(a) as being unpatentable over Jaegers et al. (U.S. Patent No. 5,680,934) in view of Amatangelo (U.S. Patent No. 4,948,039), Westlake, Sr. (U.S. Patent No. 4,902,365), and Weber et al. (U.S. Patent No. 4,940,629).

Applicants respectfully disagree that the combination of art teaches Applicants' invention. None of the prior art patents alone or in combination teach or suggest a method of making a sandwich structure provided with a hinge wherein the panels are made of reinforced thermoplastic material, the structure has a cellular core made of a thermoplastic material, and an incision is cut through one panel and the core to make a hinge.

Jaegers discloses a cardboard honeycomb protector having first and second panels and a core between the panels. In order to perform the function of an edge protector, a channel must be cut through one of the panels and the core as shown in Figures 3-6. This channel is more than an "incision" as claimed in the present invention. It requires two cuts and removal of the core. The cardboard of Jaegers must be folded such that the cut lines or channels are on the inside of the folded protector. In the present invention, the cut line made form the single incision forms an outer edge of the composite panel. Accordingly, it would not be obvious from Jaeger to only use a single incision to form a hinge.

Amatangelo does not disclose a “thermoplastic honeycomb” as suggested by the Examiner or a cellular core as claimed by the Applicants. The panels 14, 16 are separated by webs 18 as shown in Figure 7. The webs 18 have open ends. When boxes are made by folding the panels as suggested by Figure 4, open channels will exist which will allow water and/or other particles to enter thereby increasing the chance for rattles and other unwanted noise. The web structures do not form cellular structures.

Westlake discloses a process of making a structure wherein a honeycomb structure, “preferably aluminum” is pressed between thermoplastic panels until the honeycomb structure penetrates the panels. Westlake, Col. 1, line 60 - Col. 2, line 9. Although Westlake states that the honeycomb structure may be made out of other materials, such as paper or plastic, Applicant does not believe that there is a reasonable expectation that the pressing technique of Westlake would be able to cause Applicant’s thermoplastic cellular structure to penetrate the skins. Westlake does not show a bonding technique but rather a mechanical locking technique wherein the honeycomb structure penetrates the panels. Although the pressure needed to have aluminum honeycomb penetrate thermoplastic may be low, Westlake gives no indication as to what pressure it would require to have plastic or paper penetrate the thermoplastic panels, if that is even possible.

Lastly, although Weber et al. teaches using a fiber reinforced skin foam (Weber, Abstract), there is no suggestion or motivation to use fiber in panels that are folded. Weber discloses molded fiber reinforced foam parts. In fact, Applicant discusses in detail that those skilled in the art believed that glass reinforced panels would not be strong enough to constitute a structural hinge. Specification, p. 3, lines 14-28. The fact that those skilled in the art did not believe that glass reinforced panels would not make a strong hinge is also evident by the fact that the prior art does not disclose a panel having glass reinforcement that is folded.

Accordingly, claim 1 and claims 2-7 and claims 10-15 which depend therefrom are patentable over the cited combination of art.

The Examiner rejected claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over the above references and further in view of Mumper (U.S. Patent No. 3,786,708) and Northall (U.S. Patent No. 1,491,134), respectively. Since claims 3 and 4 depend from patentable claim 1, claims 3 and 4 are also patentable over the cited art. Further, Northall relates to sawing wood, clearly a nonanalogous art which makes the combination of prior art improper.

Applicants have amended claims 10-15 and submits the application is in condition for allowance and respectfully requests issuance.

Applicants respectfully request that the Examiner telephone Applicants' attorney if it would advance prosecution of the case.

A check in the amount of \$110.00 is enclosed to cover the Petition fee. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978 -- a duplicate of this paper is enclosed for that purpose.

Respectfully submitted,

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Date: March 6, 2002

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Attachment



VERSION WITH MARKINGS TO SHOW CHANGES MADE

10. (Twice Amended) A method according to claim 1 [or claim 7], characterized in that, prior to forming said panel (100) a pre-assembly constituted by the stack of at least the first skin (101), of the cellular core (102) and of the second skin (103) is heated.

11. (Twice Amended) A method according to claim 1 [or claim 7], characterized in that, while said panel (100) is being formed, the first and second skins (101, 103) have a forming temperature lying approximately in the range 160°C to 200°C.

12. (Twice Amended) A method according to claim 1 [or claim 7], said method being characterized in that the first and second skins (101, 103) are made up of glass fiber fabric and of a thermoplastics material.

14. (Twice Amended) A method according to claim 1 [or claim 7], characterized in that the cellular core (102) of the panel (100) has an open-celled structure of the tubular or honeycomb cell type.

15. (Twice Amended) A panel (100) of sandwich-type composite structure and comprising a stack made up of at least a first skin (101) made of a reinforced thermoplastic[s mateiral] material, of a cellular core (102) made of a thermoplastics material, and of a second skin (103) made of a reinforced thermoplastics material, the panel being provided with at least one hinge, and being made by implementing the method according to claim 1 [or claim 7].

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